

Applicant : Kent Harrison
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Attorney's Docket No.: 10527-454001 / 02-333

Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. (Currently Amended) A medical device comprising:
an elongate body having a distal end for entry into a body vessel and positionable near a target tissue region within the body; and
a structure longitudinally deployable from the distal end of the elongate body to cool the target tissue region.
2. (Original) The medical device of claim 1 wherein the elongate body comprises:
an elongate shaft that has the deployable structure affixed to its distal end; and
an elongate sleeve that is longitudinally movable with respect to the shaft, wherein the elongate sleeve, when moved distally, encompasses the deployable structure.
3. (Original) The medical device of claim 1 wherein the deployable structure comprises a patch having a surface shaped to contact the tissue region.
4. (Original) The medical device of claim 3 wherein the deployable patch has an inner chamber that receives, from a lumen in the elongate body, a fluid for cooling the patch surface that contacts the target tissue region.
5. (Withdrawn) The medical device of claim 1 wherein the deployable structure is cup-shaped and has a periphery for contacting body tissue to form a chamber whose bounds are defined by the body tissue and an inside surface of the cup-shaped structure.

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6. (Withdrawn) The medical device of claim 1 wherein the deployable structure has an inner chamber with a Joule-Thompson orifice into the inner chamber so that a liquid supplied through the elongate body, through the orifice, and into the inner chamber has a phase change into a gas.

7. (Original) The medical device of claim 1 wherein the distal end of the device is advanceable through a body vessel to the target tissue region when the structure is in a non-deployed state.

8. (Original) The medical device of claim 7 wherein the structure cannot be advanced through the body vessel when the structure is in a deployed state.

9. (Original) The medical device of claim 1 wherein the elongate body further comprises a proximal end that remains outside the body when the distal end of the elongate body is positioned near the target tissue region.

10. (Previously Amended) A medical device comprising:
an elongate body having a distal end for entry into a body vessel and positionable near a target tissue region within the body;
a patch deployable from the distal end of the elongate shaft to cool the target tissue region, the patch having a surface shaped to contact the target tissue region.

11. (Original) The medical device of claim 10 wherein the patch comprises a collapsible frame made of a shape memory alloy so that, when deployed, the patch expands to create the surface that contacts the target tissue region.

12. (Original) The medical device of claim 10 wherein the elongate body comprises:
an elongate shaft that has the deployable patch affixed to its distal end; and

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an elongate sleeve that is longitudinally movable with respect to the shaft, wherein the elongate sleeve, when moved distally, encompasses the deployable patch.

13. (Original) The medical device of claim 12 wherein the patch is deployed from the distal end of the body by moving the sleeve proximally with respect to the shaft to expose the patch from the confines of the sleeve.

14. (Original) The medical device of claim 10 wherein the distal end of the device is advanceable through a body vessel to the tissue region when the patch is in a non-deployed state.

15. (Original) The medical device of claim 14 wherein the distal end of the device is not advanceable through the body vessel when the patch is in a deployed state.

16. (Original) The medical device of claim 10 wherein the elongate shaft comprises:
a first lumen to provide fluid to an inner chamber of the patch; and
a second lumen to remove fluid from the inner chamber of the patch.

17. (Original) The medical device of claim 16 wherein the inner chamber of the patch comprises a conduit through which fluid flows, the conduit being located adjacent to the surface of the patch in contact with the target tissue region.

18. (Original) The medical device of claim 10 further comprising at least one additional patch deployable from the distal end of the elongate body.

19. (Withdrawn) The medical device of claim 10 wherein the patch comprises a thermoelectric cooling element positioned adjacent to the surface of the patch and in contact with the target tissue region that cools the target tissue region.

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20. (Withdrawn) The medical device of claim 10 further comprising a balloon positioned adjacent to a surface of the patch that does not contact the target tissue region, the balloon providing insulation between the patch and body fluids when the patch is deployed and positioned near the target tissue region.

21. (Withdrawn) The medical device of claim 20 wherein the elongate body comprises a lumen to provide the balloon with an inflation medium.

22. (Withdrawn) The medical device of claim 20 further comprising an anchoring mechanism near the distal end of the elongate shaft that is connectable to tissues inside the body to anchor the patch when it is deployed near the target tissue area.

23. (Original) The medical device of claim 10 wherein the patch has an inner chamber with a Joule-Thompson orifice into the inner chamber so that a liquid supplied through the elongate shaft, through the orifice, and into the inner chamber has a phase change into a gas.

24. (Original) The medical device of claim 10 wherein the patch comprises a temperature sensor to sense the temperature of the surface of the patch in contact with the target tissue region.

25. - 34. (Cancelled)

35. (Currently Amended) A method of cooling a target tissue region inside a body, the method comprising:

introducing into a body vessel a distal portion of a catheter having an elongate body and a structure longitudinally deployable from a distal end of the elongate body;
positioning the distal portion of the catheter near the target tissue region;

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longitudinally deploying the deployable structure from the distal end of the elongate body;

placing the deployed structure in contact with the target tissue region; and
cooling the deployed structure to cool the target tissue region.

36. (Original) The method of claim 35 wherein the deployable structure comprises a patch having a surface shaped to contact the tissue region.

37. (Withdrawn) The method of claim 35 wherein the deployable structure is cup-shaped and has a periphery for contacting to the body tissue region to form a chamber bound by the body tissue and an inside surface of the cup.

38. (Original) The method of claim 35 wherein the target tissue region is within a chamber of the heart.

39. (Original) The method of claim 38 wherein the deploying of the deployable structure occurs after the distal end of the catheter is positioned inside the chamber of the heart.

40. (Currently Amended) A method of cooling a target tissue region inside a body, the method comprising:

introducing into a body vessel a distal portion of a catheter having an elongate body and a structure longitudinally deployable from a distal end of the elongate body;

positioning the distal portion of the catheter near the target tissue region, wherein the target tissue region is within a chamber of the heart;

longitudinally deploying the deployable structure from the distal end of the elongate body;

placing the deployed structure in contact with the target tissue region; and
cooling the deployed structure to cool the target tissue region.

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41. (Previously Presented) The method of claim 40 wherein the deployable structure comprises a patch having a surface shaped to contact the tissue region.

42. (Withdrawn) The method of claim 40 wherein the deployable structure is cup-shaped and has a periphery for contacting to the body tissue region to form a chamber bound by the body tissue and an inside surface of the cup.

43. (Previously Presented) The method of claim 40 wherein the deploying of the deployable structure occurs after the distal end of the catheter is positioned inside the chamber of the heart.